Claim Amendments

Please amend claims 1, 4, 8, 11, 14, 16, 18, and 19 as follows.

Claims 5-7, 9, and 20 have been cancelled and withdrawn from further consideration by the Examiner.

Please add new claims 21-24 as follows.

Claims as Amended

1. (currently amended) A method for protecting a semiconductor process wafer surface from ~~contacting~~ thermally degraded photoresist to improve a solder ball formation process comprising the steps of:

providing a semiconductor process wafer having a process surface comprising an uppermost passivation layer and an exposed UBM contact layer;

forming a protective layer over ~~selected areas of the process surface said protective layer including~~ the uppermost passivation layer and an exposed UBM contact layer, the protective layer comprising a resinous organic material having a glass transition temperature (Tg) that is about greater than a solder ~~thermal treatment~~ reflow temperature;

forming a patterned photoresist layer ~~over at least a portion of the~~ on protective layer comprising an opening overlying the UBM contact layer; ~~to include a photolithographic patterning process; and~~

forming a solder column within the opening on the UBM contact layer; and,

subjecting the solder column with the patterned photoresist in place to a first reflow temperature ~~semiconductor process wafer to the thermal treatment temperature~~.

2. (original) The method of claim 1, wherein the glass transition temperature (Tg) is greater than about 300 degrees Centigrade.

3. (original) The method of claim 1, wherein the protective layer comprises Benzocyclobutene.

4. (currently amended) The method of claim 1 ~~3~~, wherein the glass transition temperature (Tg) is greater than about 350 degrees Centigrade.

5. - 7. (cancelled)

8. (currently amended) The method of claim 1 ~~7~~, wherein the solder column ~~includes~~ comprises a lead content of greater than about 90 weight percent.

9. (cancelled)

10. (original) The method of claim 1, wherein the protective layer is removable by at least one of reactive ion etching and wet chemical stripping.

11. (currently amended) An improved method for forming a solder ball ~~in a semiconductor chip bonding process~~ to avoid photoresist residue in a solder ball formation process comprising the steps of:

providing a semiconductor wafer process surface ~~including at least one under bump metal (UBM) layer overlying a chip bonding pad said at least one~~ comprising an under bump metal (UBM) ~~layer including a~~ contact layer for forming a solder bump thereover;

forming a protective layer overlying the semiconductor wafer process surface including the UBM contact layer said protective layer ~~including~~ comprising a resinous organic material having a glass transition temperature (Tg) that is greater than a ~~thermal treatment~~ solder reflow temperature;

forming a patterned photoresist layer over the protective layer ~~to include a photolithographic patterning process for forming a stencil pattern including~~ forming an opening for containing a solder column overlying the UBM contact layer;

removing a portion of the protective layer within the opening to reveal the UBM contact layer ~~for forming the solder column thereover~~;

forming the solder column ~~over~~ on the contact layer; ~~and~~

subjecting the solder column to ~~the thermal treatment~~ a first reflow temperature ~~to induce solder reflow~~[.];

removing remaining portions of the protective layer and photoresist layer; and,

subjecting the solder column to a second reflow temperature to form a solder ball.

12. (original) The method of claim 11, wherein the glass transition temperature (Tg) is greater than about 300 degrees Centigrade.

13. (original) The method of claim 11, wherein the protective layer comprises Benzocyclobutene.

14. (currently amended) The method of claim 11~~3~~, wherein the glass transition temperature (Tg) is greater than about 350 degrees Centigrade.

15. (original) The method of claim 11, wherein the solder column includes a lead content of greater than about 90 weight percent.

16. (currently amended) The method of claim 11, wherein the UBM contact layer forms an uppermost under bump metal layer (UBM) ~~includes at least one~~ the UBM layers selected form the group consisting of titanium, copper, and nickel.

17. (original) The method of claim 11, wherein the protective layer is removable by at least one of reactive ion etching and wet chemical stripping.

18. (currently amended) The method of claim 11, ~~further comprising~~ wherein the step of removing ~~the photoresist layer and underlying protective layer by~~ comprises a wet chemical stripping process.

19. (currently amended) The method of claim 11, wherein the step of providing a semiconductor wafer process ~~surface including at least one under bump metal (UBM) layer further includes~~ comprises depositing a UBM masking photoresist layer over the ~~at least one~~ UBM contact layer[;] followed by ~~and~~ reactive ion etching ~~the lowermost UBM layer~~ to reveal a passivation layer surrounding ~~a chip bonding pad area~~ the UBM contact layer[;].

20. (cancelled)

21. (new) The method of claim 1, further comprising the steps of:

removing remaining portions of the protective layer and photoresist layer; and,

subjecting the solder column to a second reflow temperature to form a solder ball.

22. (new) The method of claim 1, wherein an oxygen ashing process is carried out to remove the protective layer at the bottom of the opening to reveal the UBM contact layer prior to the step of forming a solder column.

23. (new) The method of claim 11, wherein the step of removing a portion of the protective layer comprises an oxygen ashing process.

24. (new) The method of claim 11, wherein the passivation layer is selected from the group consisting of silicon nitride and silicon oxide.